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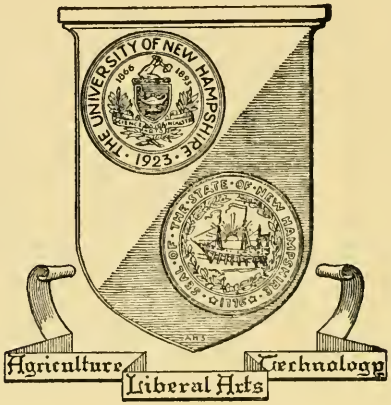


The University
of
New Hampshire

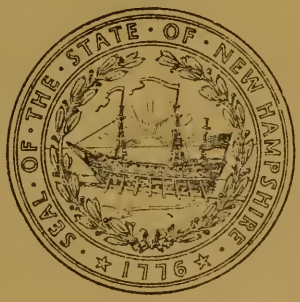
Bulletin 350 October, 1943

THE UNIVERSITY OF NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION
Department of Agricultural and Biological
Chemistry

Inspection of Commercial Fertilizers for 1943

Made for the

STATE DEPARTMENT OF AGRICULTURE



T. O. SMITH and H. A. DAVIS

THE UNIVERSITY OF NEW HAMPSHIRE
DURHAM, N. H.

INSPECTION OF COMMERCIAL FERTILIZERS

Made for the

State Department of Agriculture

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Andrew L. Felker, Commissioner of Agriculture. The state inspector, Mr. Walter Mauricette, collected samples of 67 brands of fertilizer and fertilizer materials which were offered for sale by dealers or had been delivered to consumers during the year ending June, 1943. The general character of the brands sampled is shown by the following classification:

Complete fertilizer	45
Phosphoric acid and potash	2
Superphosphate	6
Nitrate of soda	1
Muriate of potash	1
Ground bone	3
Tankage	1
Raw bone and tankage	1
Milorganite	1
Natural manures	6

The Fertilizer Law

The purchaser of a fertilizer should familiarize himself with the full text of the fertilizer law. He should not accept from the dealer any bag of fertilizer which is not tagged and guaranteed in compliance with the law. The law governing these matters is as follows:

"Every lot or parcel of commercial fertilizer or fertilizer material sold or offered or exposed for sale within this state shall be accompanied by a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package; the name, brand or trademark under which the fertilizer is sold; the name and address of the manufacturer or importer; the location of the factory; and a chemical analysis stating the minimum percentage of nitrogen, of available phosphoric acid and of water soluble potash expressed in whole numbers.

"No fertilizer or fertilizer material containing the three essential fertilizing elements, nitrogen, phosphoric acid and potash may be sold or offered for sale if the total minimum plant food nutrients contained therein is less than fourteen per cent by weight, provided however that natural animal and bird manures shall be excepted from the provisions of this section."

The state official charged with the enforcement of the fertilizer law is the Commissioner of Agriculture. Copies of the full text of the law may be obtained from his office in Concord. All inquiries concerning the law and all matters relative to the registration of brands should be addressed to his office.

The chief purpose of the official inspection required by the fertilizer law is to protect the consumer against the misbranded products which would doubtless soon appear on the market if the sale of fertilizer was not under state regulation. The value of a fertilizer depends mainly upon its content of available plant food, particularly nitrogen, phosphoric acid, and potash. The presence of these constituents can only be determined by

a chemical analysis. To insure that they are being furnished by all manufacturers in the guaranteed amounts, it is considered necessary that each brand of fertilizer offered for sale be officially inspected and analyzed one or more times each year. When failure to meet the guarantee is proved by chemical analysis, the prosecution or seizure provisions of the law may be invoked. The purchaser's refusal to buy a fertilizer which does not conform to the law in every respect will not only assist in the enforcement of the law but will at the same time insure himself the protection of the law. If the buyer fails to assure himself the legal requirements have been met, he accepts the fertilizer at his own risk.

All samples reported in this bulletin were drawn by an inspector appointed by the Commissioner of Agriculture. The chemical analyses were made by the methods of the Association of Official Agricultural Chemists.

Conformity to Guarantee

Forty-nine of the 67 brands analyzed equaled or exceeded the manufacturer's guarantee. No brand failed to meet the guarantee in all of the three constituents, total nitrogen, available phosphoric acid, and water-soluble potash. Nine brands were below guarantee in two of the three constituents, two in nitrogen and available phosphoric acid, five in nitrogen and potash, and two in phosphoric acid and potash. Nine brands failed to meet the guarantee in only one constituent.

Including all the brands referred to above, 11 brands were found to contain less than the guaranteed amount of nitrogen. The greatest deficiency was 0.32 per cent. The average of the other 10 deficiencies was 0.21 per cent. Six brands failed to meet the guarantee in available phosphoric acid. One brand was deficient 0.97 per cent. The average of the other five deficiencies was 0.31 per cent. Ten brands contained less potash than was guaranteed. The greatest deficiency was 1.55 per cent. The average of the other nine deficiencies was 0.43 per cent.

Three brands were guaranteed to contain magnesium oxide. All exceeded the guarantee.

In the tabulation of the analyses in the following pages deficiencies of one-fourth of one per cent or more are shown in bold-face type. The manufacturers are arranged alphabetically. The brand name is listed alphabetically or numerically by formula under the manufacturer.

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
American Agricultural Chemical Co. North Weymouth, Mass.										
AA 4-10-10	4.00	**3.75**	.....	10.58	10.00	10.03	10.00	**9.74**	.....	.....
Agrico 3-10- 5	3.00	3.12	.....	11.20	10.00	10.49	5.00	5.81	.....	.....
Agrico 3-12- 6	3.00	2.97	.....	12.99	12.00	12.41	6.00	**5.41**	.....	.....
Agrico 4- 9- 7	4.00	4.04	.....	9.58	9.00	8.90	7.00	6.80	.....	.....
Agrico 4-12- 4	4.00	3.78	.....	12.33	12.00	12.16	4.00	4.03	.....	.....
Agrico 4-16-20	4.00	4.02	.....	17.06	16.00	16.82	20.00	20.17	.....	.....
Agrico Superphosphate 18%	.....	.....	.....	19.37	18.00	18.39	.....	.....	.....	.....
Agrico Victory 3-8-7	3.00	2.78	.....	8.51	8.00	8.09	7.00	**6.68**	.....	.....
Fine Ground Bone	2.47	2.51	23.00	27.15	.....	17.55	.....	.....	.....	.....
Pulverized Sheep and Goat Manure	1.25	1.53	.....	1.16	1.00	1.04	2.00	3.24	.....	.....
Apothecaries Hall Co. Waterbury, Conn.										
Bone Meal	2.25	3.40	22.00	25.77	.....	17.36	.....	.....	.....	.....
Liberty 3-12- 6	3.00	3.30	.....	12.24	12.00	12.00	6.00	6.91	.....	.....
Liberty 4- 9- 7	4.00	4.26	.....	9.78	9.00	9.56	7.00	7.05	.....	.....
Liberty 4-10-10	4.00	4.41	.....	10.73	10.00	10.26	10.00	10.03	.....	.....
Liberty Victory Garden Fertilizer 3-8-7	3.00	3.13	.....	8.58	8.00	8.34	7.00	8.43	.....	.....
Armour Fertilizer Works Carteret, N. J.										
Armour's Big Crop 0-20-20	.....	.....	.....	19.48	20.00	**19.03**	20.00	**18.67**	.....	.....
Armour's Big Crop 3-12- 6	3.00	3.03	.....	12.93	12.00	12.07	6.00	6.14	.....	.....
Armour's Big Crop 4- 9- 7	4.00	3.79	.....	9.70	9.00	9.04	7.00	**6.75**	.....	.....
Armour's Big Crop 4-10-10	4.00	4.17	.....	10.21	10.00	10.00	10.00	10.77	.....	.....
Armour's Big Crop Superphosphate 20%	.....	.....	.....	21.25	20.00	20.21	.....	.....	.....	.....
Armour's Bone Meal	2.47	**2.15**	23.00	30.12	.....	14.77	.....	.....	.....	.....
Armour's Lawn Fertilizer	4.00	4.03	.....	9.15	8.00	8.57	8.00	**7.75**	.....	.....
Armour's Victory Garden Fertilizer 3-8-7	3.00	2.82	.....	8.46	8.00	8.03	7.00	6.82	.....	.....

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Atkins and Durbrow New York, N. Y.										
Driconure	2.00	2.83	.....	2.91	1.00	2.63	1.00	1.92	.....	.....
Chilean Nitrate Sales Corp. New York, N. Y.										
Champion Brand 16%	16.00	16.09	.....	.....	.....	.....	.....	.....	.....	.....
Consolidated Rendering Co. Boston, Mass.										
Corenco 3-10- 3	3.00	3.34	.....	10.62	10.00	10.00	3.00	3.04	.....	.....
Corenco 4- 9- 7	4.00	4.07	.....	10.19	9.00	9.72	7.00	7.01	.....	.....
Corenco 4-10-10	4.00	4.03	.....	10.34	10.00	10.06	10.00	10.29	.....	.....
Corenco 4-12- 4	4.00	4.08	.....	12.47	12.00	12.08	4.00	4.03	.....	.....
Corenco Sheep Manure	1.25	1.83	.....	1.77	1.00	1.65	2.00	3.55	.....	.....
Corenco Superphosphate 20%	.....	.....	.....	20.77	20.00	20.41	.....	.....	.....	.....
Corenco Victory Garden 3-8-7	3.00	3.19	.....	9.03	8.00	8.62	7.00	7.07	.....	.....
Ground Tankage	7.40	7.42	9.15	12.49	.....	8.91	.....	.....	.....	.....
Raw Bone and Tankage	4.00	4.01	20.00	21.90	.....	9.95	.....	.....	.....	.....
Superphosphate 16%	.....	.....	.....	19.07	16.00	17.83	.....	.....	.....	.....
Eastern States Farmers' Exchange Springfield, Mass.										
Eastern States 3- 8- 7	3.00	2.78	.....	9.31	8.00	8.97	7.00	7.02	.....	.....
Eastern States 3-12- 6	3.00	3.04	.....	13.09	12.00	12.48	6.00	6.59	1.00	1.85
Eastern States 4-10-10	4.00	4.09	.....	10.98	10.00	10.85	10.00	10.28	1.00	1.17
Eastern States 6-15-15	6.00	6.19	.....	15.46	15.00	15.06	15.00	16.06	1.00	1.84
Eastern States 20% Superphosphate	.....	.....	.....	21.73	20.00	20.85	.....	.....	.....	.....

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
International Minerals & Chemical Co. Woburn, Mass.										
International 3-12- 6	3.00	3.13	.....	12.56	12.00	12.04	6.00	6.31	.....	.....
International 4- 9- 7	4.00	4.07	.....	9.75	9.00	9.00	7.00	7.19	.....	.....
International 4-10-10	4.00	4.12	.....	10.88	10.00	10.36	10.00	10.02	.....	.....
International 6-15-15	6.00	**5.72**	.....	14.93	15.00	**14.68**	15.00	16.25	.....	.....
International Caribee Sheep Manure	1.25	1.45	.....	1.14	0.75	1.03	2.00	3.39	.....	.....
International Organic 5-6-4	5.00	5.29	.....	6.43	6.00	6.18	4.00	**3.55**	.....	.....
International Victory Garden Fertilizer 3-8-7	3.00	3.17	.....	8.67	8.00	8.03	7.00	7.07	.....	.....
Merrimack Farmers' Exchange Concord, N. H.										
Merrimack 0-14-14	.....	.....	.....	14.53	14.00	14.18	14.00	**12.45**	.....	.....
Merrimack 3-12-15	3.00	6.31	.....	14.59	12.00	14.36	15.00	15.03	.....	.....
Merrimack 4- 9- 7	4.00	4.09	.....	9.77	9.00	9.36	7.00	7.25	.....	.....
Merrimack 4-10-10	4.00	4.14	.....	10.87	10.00	10.38	10.00	10.01	.....	.....
Merrimack 4-12- 4	4.00	4.04	.....	12.53	12.00	12.07	4.00	4.06	.....	.....
Harold Norwood North Reading, Mass.										
Norwood Brand Sheep Manure	1.83	**1.53**	.....	0.31	0.89	**0.20**	1.03	3.67	.....	.....

	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
			Total		Available					
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Rogers & Hubbard Co. Portland, Conn.										
Hubbard's Corn and Grain Fertilizer 3-12-6	3.00	3.32	.....	12.36	12.00	12.02	6.00	6.79	.....	.....
Hubbard's High Potash 4-10-10	4.00	4.21	.....	10.73	10.00	**9.71**	10.00	10.26	.....	.....
Hubbard's 60% Muriate of Potash	.....	.....	.....	.....	.....	.....	60.00	60.04	.....	.....
Hubbard's Potato Fertilizer 4-9-7	4.00	4.19	.....	9.62	9.00	9.02	7.00	7.58	.....	.....
Hubbard's Sheep Manure	1.50	1.94	.....	1.53	1.00	1.38	1.50	3.24	.....	.....
Hubbard's Superphosphate 20%	.....	.....	.....	21.35	20.00	21.25	.....	.....	.....	.....
Hubbard's Victory Garden Fertilizer 3-8-7	3.00	3.31	.....	8.56	8.00	8.46	7.00	7.61	.....	.....
Red H 3-12- 6	3.00	3.40	.....	13.33	12.00	12.77	6.00	6.00	.....	.....
Red H 4- 9- 7	4.00	4.54	.....	10.17	9.00	9.29	7.00	7.07	.....	.....
Red H 4-10-10	4.00	4.45	.....	10.74	10.00	10.22	10.00	10.29	.....	.....
Red H 6-15-15	6.00	6.28	.....	16.28	15.00	15.69	15.00	15.07	.....	.....
Sewerage Commission Milwaukee, Wis.										
Milorganite	6.00	5.79	.....	2.56	2.00	2.13	.....	.....	.....	.....
Tennessee Corp. New York, N. Y.										
Loma 5-10-4	5.00	5.26	.....	10.02	10.00	9.85	4.00	4.20	.....	.....
Wirthmore Retail Stores Greenfield, Mass.										
Wirthmore 3-12-6	3.00	3.54	.....	13.17	12.00	12.85	6.00	6.12	.....	.....